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Dementia Precox Studies

CLINICAL DEMENTIA PRECOX WITHOUT KNOWN DISTURBED PERIODS, SCANT ADRENALIN MYDRIASIS, DIMINISHED PRESSOR ADRENALIN REACTION. TYPICAL DEFENSIVE FERMENT REACTIONS, CECAL STASIS LARGE LOAD OF BETAIMINAZOLYLETHYLAMINE IN THE STOOL.

By BAYARD HOLMES, M. D., and JULIUS RETINGER, Ph. D.

The patient, Robert Frank, twenty years old, was sent from the County Hospital to the Psychopathic Hospital on September 13, 1915, and came under the care of Dr. Adam Szwajkart, who afforded us the opportunity of this examination and study.

When we first saw the patient he was a greatly emaciated, greasy-faced, mute, bed-fast and inactive boy, six feet tall, with a span of seventy inches. He weighed less than one hundred pounds. His hair was thin and brittle but normally disposed over his head and body in a perfectly masculine manner. His beard was thin and scattered, but there were no sharp lines separating the bare from the hairy parts. His sexual organs appeared normal, with no gross, palpable pathologic findings and no evidences of gonorrheal urethritis. His bladder had, however, been infected when he first came into the psychopathic hospital probably by catheterization and *now gas-forming fermentation was going on in it and the gas and mucous were escaping in blubbers almost continuously,* while the incontinence of urine still existed. His hips exhibited two superficial bed sores and the sacral region as large as a hand was excoriated, but the skin was not broken through. There were two similar but smaller excoriations over the shoulder blades. Both heels were black from decubitus. The teeth were good, but the gums much infected. They were not examined for nitroso bacilli. The tonsils had several suppurating crypts and pus could be squeezed out of them, but they were not examined for amoebae.

The seminal fluid, milked out of the vesicles with the finger in the rectum contained a few dead spermatozoa and much detritus. It had

*From the Laboratory of the Psychopathic Hospital of Cook County, under the direction of Dr. Adam Szwajkart.

the smell of semen but was not examined for spermine. There was no palpable lymph adenitis, no active inflammation of the tonsils, no enlargement of the tongue. The chest showed no abnormality. The heart sounds were normal and the cardiac dullness normally located and certainly not increased to the right. The *retracted* abdomen showed no tenderness and no abnormality. The spleen could not be palpated. Both kidneys were palpable but not movable. There was no tenderness elicited by palpating the abdomen.

His pupils were widely dilated but responded equally to light. There was great pupillary unrest when the patient was in the light. The sclera was clear, the conjunctival surfaces were red from infection and inattention. The corners of the eyes were encrusted with pus. Touch on the sclera produced a contraction of the pupil. All the reflexes were normal but slow. There was no dermographia. The skin was greasy, especially above the chest and face.

The boy would not answer questions though the nurses said that he did speak to his mother. So far as we could make out he was perfectly mute except on the rarest occasions. He submitted to all examinations without resistance but there was little or no active catatonia. If he was put in any position in bed he remained there without moving hand or foot for any length of time, but generally in an extended position, but he was not stiff. Very rarely he would lie curled up on his side. When blood was taken from his arm he made no resistance whatever. His hospital records were obtained from the County Hospital and are abstracted with much abbreviation and some omissions.

"He was first admitted to the service of Dr. Hamburger on June 24, 1915 (Case 572,474). Catheterization of his greatly distended bladder was necessary at once. He was unable to walk and came in the ambulance. He could not answer questions intelligently and was very apathetic. It was noted that he became sick two months previously and gradually grew worse. He was said to be a boy of good habits and worked as an engraver. He had worked more than a year at the same job until June 15, 1915. He was said to have two brothers and one sister (he has six brothers and sisters.—B. H.) His pupils were widely dilated but reacted to light, his reflexes were normal and brisk. His blood pressure was 115. There were 9,200 white corpuscles in the blood; the pulse was 64 to 80, the temperature generally subnormal but a few times as high as 101°F. The urine was acid, specific gravity 1.030, and contained no abnormal constituent or reaction. Spinal fluid contained five cells to cmm. The Nonne reaction was negative. The diagnosis of typhoid fever was made, but promptly denied by the course of the case, the examinations during the following month and numerous negative Widal reactions. Dr. Walter W. Hamburger made a diagnosis of dementia precox and transferred the patient to the Psychopathic Hospital on July 23, 1915.

"On July 31, Robert Frank was again admitted to the County Hospital in the service of Dr. E. E. Irons, with the provisional diagnosis of meningitis. It is not

certain whether he was sent back from the Psychopathic Hospital or whether he was brought from home. In the anamnesis which was taken by the interne a bilateral enlargement of the thyroid was noted. It was symmetrical and the patient's fingers were clubbed (Dr. Kubicek). Old compound fracture of the lower right leg and the resulting scar was noticed. Cremaster and abdominal reflexes quick, others absent, bladder distended.

"Cerebro-spinal fluid was examined by Dr. Woodruff on August 7, 1915. Ten cubic centimeters were taken; eight cells per cubic millimeter; globulin test negative, same as July 31. Wassermann reaction with three antigens, two negative, one positive, which later was believed due to error. White corpuscles 9,750 in the blood and reds 5,460,000; hemoglobin index 88. The small mononuclears were 24 per cent, the large mononuclears were 5 per cent and the polymorphonuclears 65 per cent, the cosinophiles 4 per cent and the transitionals 2 per cent. The catheterized urine was clear; 1.022 acid and contained mucous, pus cells and a few hyaline casts. During the following six weeks he was without temperature abnormality and was transferred to the Psychopathic Hospital September 13, 1915."

We have already described the patient as he appeared when we first saw him. The accompanying half-tone (Fig. 1) is from a photograph made October 2, 1915. He was still mute and untidy but could walk when brought up onto his feet and did go to the toilet once after an enema.

Fig. 1.—Robert Frank as he appeared Oct. 2, 1915.

The circumference of his head was 22-1/2 inches. He was seventy-two inches tall standing against a door. The span of his arms was seventy inches. Circumference of his chest at upper line was thirty-one inches, and that of his pelvis at the crest was thirty inches. His chest had the regular masculine contour. The epiglottis was not omega shaped. His teeth were good but the gums were suppurating and bled easily. His

tongue was heavily coated and his breath was very foul. Each of his thighs measured fifteen inches. Each calf measured eleven inches at the largest places. There was no catatonia but great inactivity. He was never excited. Patient lay where he was placed and rarely winked. His breathing was shallow and slow but there was no indication of any solidification at either apex. His pulse was sixty and the heart sounds were normal. There was some cyanosis and some edema of the extremities but it was not marked and might well have been the "clubbing of the fingers" mentioned

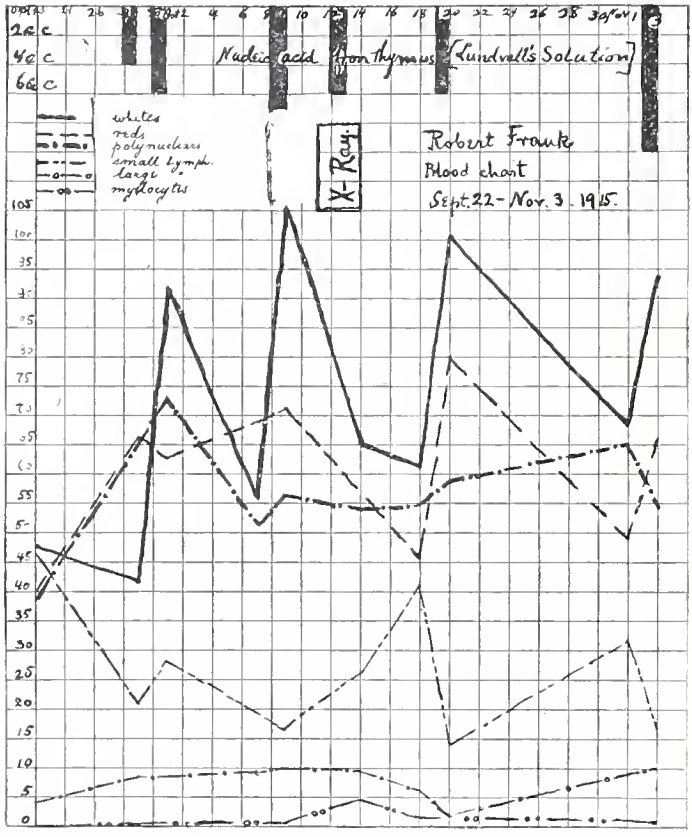

Fig. 2.—This chart of Robert Frank's blood picture is a composite. The white corpuscles as a whole are laid down in hundreds, beginning with 4,550. The red corpuscles are laid down in hundred thousands, beginning with 3,590,000. The other forms are in percentages of the total white corpuscles at the time. The doses of sodium nucleate solution are represented by black bars at the top of the chart.

in the previous history. The seminal fluid as mentioned above was full of detritis and remnants of dead spermatozoa. Several examinations were made.

The blood count on September eighteenth showed 4,750 white blood corpuscles. The differential count is shown on the chart (Fig. 2). Wassermann reactions on blood taken at this time were negative and his spinal

fluid was also negative. The antitryptic index on the fresh blood serum was 50 (normal 50). The peptolytic index with Witte peptone was 60 (normal<8). The luetin reaction with Mulford's luetin, four inches above the right elbow was examined repeatedly and showed no reaction after ten days.

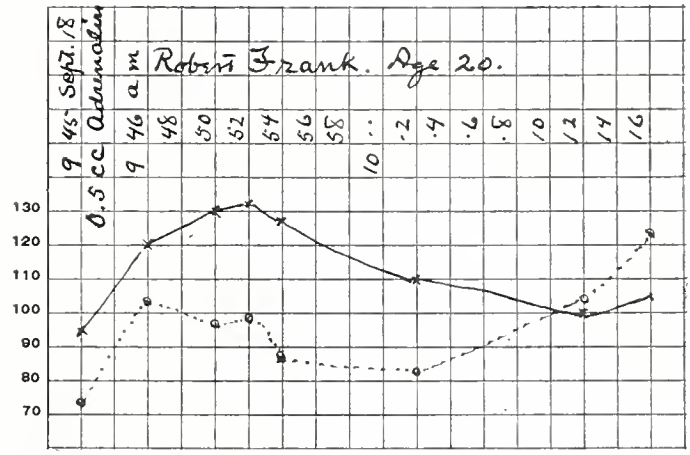

Fig. 3.—Adrenalin pressor reaction. Moderate adrenalin mydriasis at the same time from instillation into conjunctival sac for ten minutes of several drops of 1-1,000 adrenalin solution, P. D. & Co.

The Abderhalden dialyzing reaction, with two tested collodion dialyzers for each substrate, after sixteen hours incubation was as follows:

Testicle	Cerebral Cor.	Liver	Corpus Callos.	Colon	Ileum	Control
+	+++	+	+	—	—	—
+	+++	—	++	—	—	—

The patient's pupils were widely dilated but equal and regular in size

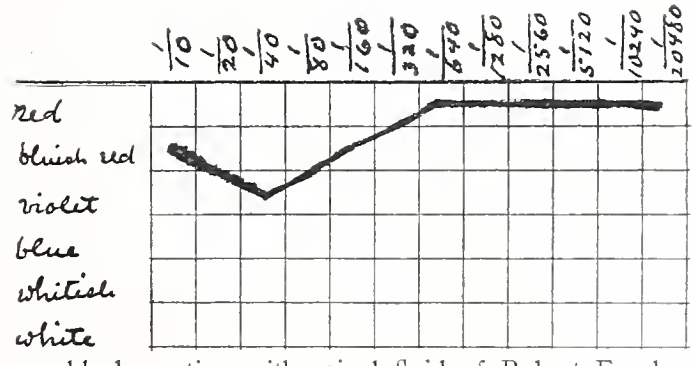

Fig. 4.—Lange goldsol reaction with spinal fluid of Robert Frank. Compare the work of Paul G. Weston.

and they responded to light equally and promptly. Touching the sclera with the tip of the finger produced a recognizable contraction of the pupil (Westphal Bumke reaction). A few drops of adrenalin (1:1000 solution,

Parke, Davis & Co.) were slowly instilled into the left conjunctival sac. This was repeated every few minutes for ten minutes, the eyes being kept covered with a towel. The pupils were examined in a strong daylight several times during the following hour. In the left eye there was a slight but perfectly perceptible adrenalin mydriasis. Neubürger reaction+). The left pupil did not contract as much in the strong light as did the right pupil. Pupillary unrest was very marked in both eyes.

At 9.45 a. m. his pulse was 76 and his blood pressure was 95 by the tactile method. This was confirmed by the interne, Dr. Fischer using the auscultatory method. One-half a cubic centimeter of Parke Davis & Co.'s 1:1000 adrenalin solution was then injected into the deltoid muscle and in seven minutes the blood pressure was 133. It then began to de-

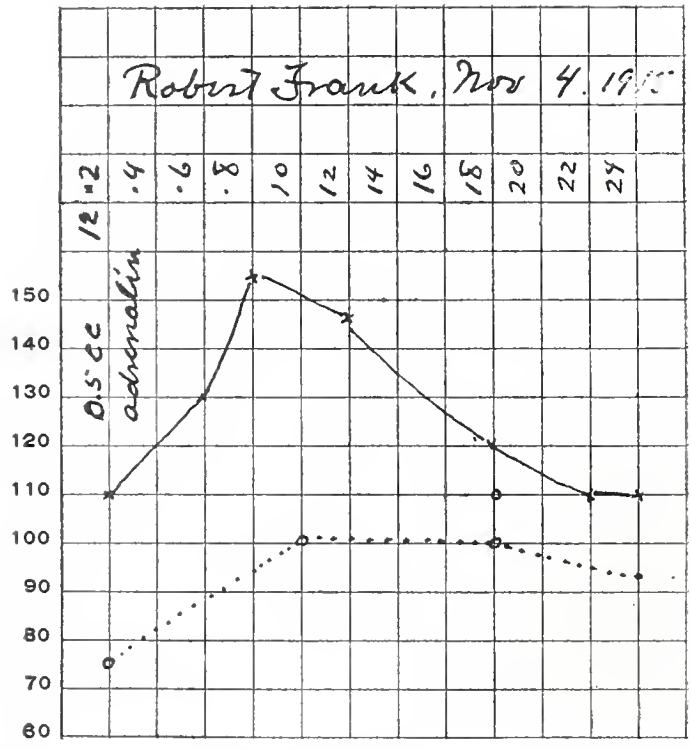

Fig. 5.—Curve of blood pressure and pulse of Robert Frank after injection of 0.5 cc. solution of adrenalin 1-1000, P. D. & Co. There was at the same time a very slight adrenalin mydriasis half an hour after the instillation of ten drops of adrenalin solution into the left eye.

cline and had fallen to 100 in less than thirty minutes after the injection was given. The pulse in the meantime had risen, fallen and risen again. Full details are shown in Fig. 3. (Willi Schmidt's reaction.)

The Lange-Goldsol reaction was made with cerebrospinal fluid on September 23, 1915, and the curve is shown in Fig. 4.

On September 27th and again on September 29th 100 grm. of stool

taken by plain water enemas were examined for the betaiminazolylethylamine or histamine and more than 0.001 grm. was found each time.

Dr. W. H. Nadler took blood, for blood cultures, from Robert Frank on September 18th, but did not find any organisms. On account of his apathetic condition suggesting beriberi we prescribed mush of rice polishings and three doses of vitamine, the product of two pounds of rice polishings extracted without heat. There was no obvious reaction such as is seen in beriberi.

On September 28th the preparation of thymus sodium nucleate was

Fig. 6.—This was taken six hours after the barium meal. Robert Frank, Plate No. 34144E.

completed and after it had been put up by Mr. Breckwald of Sargent's Pharmacy into the "Lundvall Solution" it was given to Robert Frank at rather irregular intervals. During this time he had a bath for at least an hour each day and two large enemas of warm water each morning to empty the colon. His feeding was carefully pushed. He had three ward meals and three special luncheс each day. The chart, Fig. 2, shows the mobilizing of the corpuseles during that time, October 22d, to November 3d, 1915.

On October 11th Dr. E. F. Blaine in the X-ray room began to make a study of the motor efficiency of his intestinal tract. This somewhat broke into the nucleate experiments as the blood charts plainly suggest. Dr. Blaine found that the stomach had not emptied itself of the barium meal at the end of six hours. (Fig 6.) There was also retardation in the lower portion of the ileum and after seventy-two hours the colon was not entirely empty.

The following is Dr. Blaine's complete report. Two plates, Figures 5 and 6, are reproduced.

Robert Frank..... Age 20.		Ward—Psychopathic
		Plates
	Interne—Troxell	34144-E
	Attending—Holmes	34205-F
		34239F
		34278-F
	Reported by E. S. Blaine	34320-F

October 11, 1915.—Examination of the stomach with barium meal shows a six-hour residue of fair size; the balance of the meal is seen in the ascending transverse colon, the head of the column reaching almost to the splenic flexure; this would indicate good progress after leaving the stomach, but a delayed emptying of the latter.

30 hours.—Practically all of the barium has passed through the small bowel and is now evenly distributed throughout the colon; *opposite the hepatic flexure there is seen to be an extra bend or loop;* the presence of gas in the distal colon is noted. (Italics ours.)

54 hours.—Shows further progress of the barium, although the entire colon is still filled; the same increase in amount of gas previously noted is present; it would seem that there had been no bowel movement during the past 24 hours. The indications of this stage of examination is of a moderate delay and lessened motility of the colon.

78 hours.—A very small amount of barium meal is noted in the rectum; the balance of the colon being totally empty of the test meal; there is, however, a marked accumulation of gas throughout the entire colon.

92 hours.—The previously noted presence of gas is still noted throughout.

On November 4th the patient's bed sores were all healed. The skin over the "blood blisters" on the heels had come off, leaving the heels well and sound. He was still mute but had been to the table one day and had fed himself! *Once, on some urging, he asked the doctor for some grapes* and when they were provided he fed himself, picking the grapes from the bunch. His face seems a little fatter and he stands and, with help, walks better than he did. His hands and feet are warm. He is still untidy, though incontinence of urine seems to have passed. The pupils are widely dilated. He winks at long intervals.

Instillation of adrenalin solution into the conjunctival sac for ten minutes did not develop any mydriasis at this time or only the slightest

show of mydriasis. The pressor action of adrenalin 0.5 cc. (P. D. & Co.) into the deltoid is normal and produces no muscular trembling. Fig. 5. Blood taken at this time showed a peptolytic index of 60 (normal<8). There was an antitryptic index of 50. The Abderhalden dialyzing tests on November 11th, 1915, were as follows:

Cerebellum	Cortex	Pons	Optic Thalamus	Corp. Call.	Test.	Kidn	Liver	Colon	Ileum	Adrenals
++	++	+	+	++	+++ -+*	++	++	—	+++	+

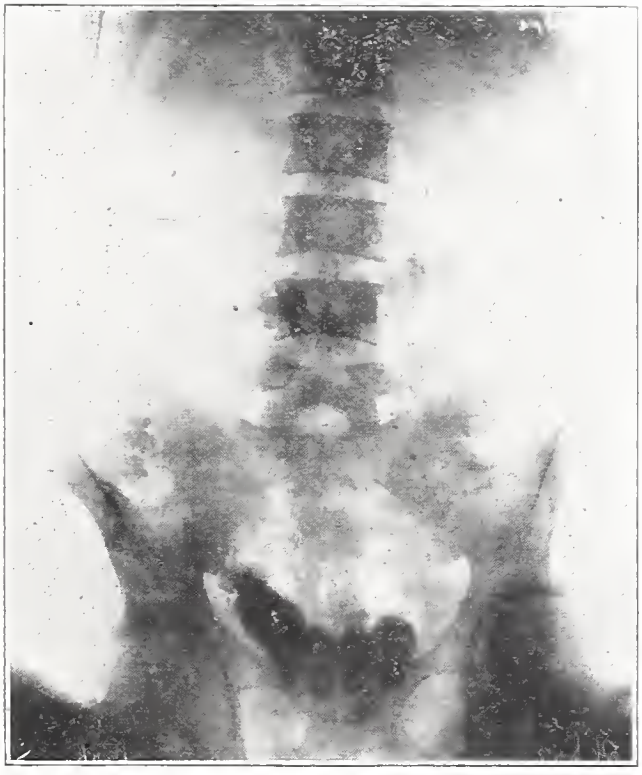

Fig. 7.—This photograph was taken 54 hours after the barium meal. Robert Frank.

A stool taken at this time was examined for betaiminazolylethylamine and showed the same amount as before, namely 0.001 to 100.0 of stool.

In the stools of this patient, which were always very offensive, there have been found large quantities of buturic acid. An estimation of the quantity was not made.

After one of his enemas on October 20th he was said by the nurse to have passed a complete mucous cast of the colon which was more than three feet long.

*The second testicle was obtained at autopsy of a syphilitic and showed considerable gumma.

There were several tests used in our researches that were omitted on this patient because he was transferred to the Chicago State Hospital before they were successfully completed. The indican and other products of amine catabolism were not demonstrated in the blood (Obermeyer-Jolles) nor was the urine successfully or even adequately examined for these products. It was not possible to get urine clean enough and fresh enough for this purpose.